Return Transmissions between ADRs and A-Shares of Dual-Listed Chinese Firms

Congsheng Wu
School of Business
University of Bridgeport, Bridgeport, CT

Ke Chen
Chongqing Jiaotong University
Email: ckebest@163.com

Abstract

This study examines the mutual return transmissions between ADRs and A-shares for a sample of Chinese companies that are dual-listed in New York and Shanghai. The U.S. listing takes the form of American Depositary Receipts (ADRs) while the Shanghai listing takes the form of A-shares. Though ADRs and their underlying A-shares lack full fungibility due to regulatory constraints, they nevertheless represent the same claiming rights and hence should be affected by the same fundamentals. We investigate this issue by using the bivariate VAR model while at the same time accounting for the non-synchronous trading problem caused by the fact that the two markets are located in different time zones and that the two market observe different national and religious holidays. We find that the two types of securities affect each other strongly. The mutual influence is stronger and more prevalent going from China to U.S. than it is the other way around. We also find that the returns of ADRs and A-shares are strongly affected by the market sentiments of the marketplace where they are listed. Finally, the global financial crisis has strengthened the mutual influences between ADRs and A-shares.

Return Transmissions between ADRs and A-Shares

Our study attempts to examine the mutual return transmissions between ADRs and their A-share counterparts for a sample of New York and Shanghai dual-listed Chinese firms.

Data and Sample

Three sets of samples are used

1. Chinese domestic A-share IPOs
2. H-Share IPOs by Chinese companies
3. ADR-type IPOs by Chinese companies

Our study distinguishes from previous studies and thus makes contributions to the literature in several ways.

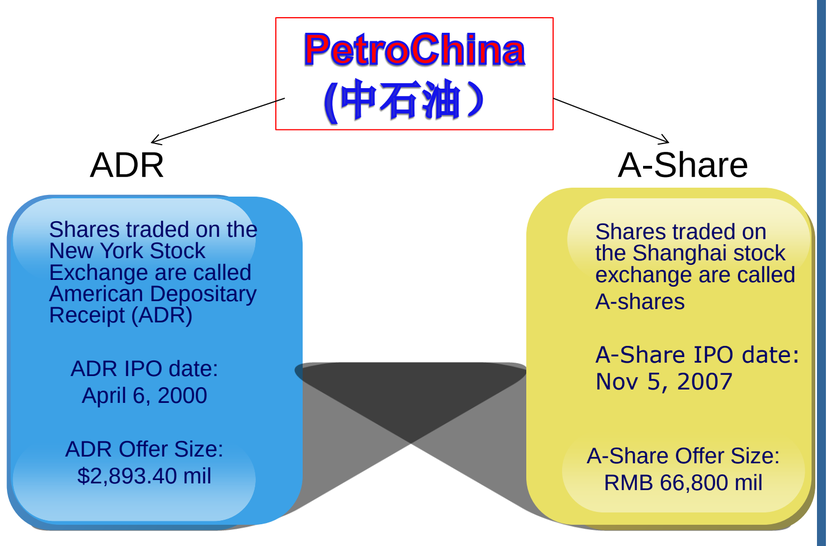
First, we take into consideration the non-synchronous trading issue.

Secondly, we consider whether and how the returns of ADRs and A-shares are affected by the market sentiments.

Thirdly, we examine how the global financial crisis has altered the ADR and A-share return feedback dynamics.

Cross-Listed Chinese companies with ADRs and A-shares

Company	Symbol in NYSE	ADR listing date	ADR offer size ($ mil)	A-share IPO date	A-share offer size (yuan mil)	Listing time gap (ADR to A-share)
Sinopec Shanghai Petrochemical	SHI	7/26/93	342.6	11/8/93	1,650	105
Huaneng Power International	HNP	10/6/94	625	12/6/01	2,783	2,618
Guangshen Railway	GSH	5/13/96	473	12/22/06	10,332	3,875
China Eastern Airlines	CEA	2/4/97	252.2	11/5/97	735	274
China Southern Airlines	ZNH	7/30/97	611.9	7/25/03	2,700	2,186
Yanzhou Coal Mining	YZC	3/31/98	258.3	7/1/98	270	92
PetroChina	PTR	4/6/00	2,893.40	11/5/07	66,800	2,769
China Petroleum & Chenmical	SNP	10/18/00	3,465.00	8/8/01	11,816	294
Aluminum Corporation of China	ACH	12/11/01	457.8	4/30/07	NA	1,966



Methodology

The primary concern of this study is the two-way return transmission between ADRs and A-shares.

- *First, the two markets have differing national and religious holidays, unexpected events, and so forth.*
- *Second type of non-synchronous trading occurs because ADRs and A-shares are traded in separate markets with different time zones.*

With this in mind, we use the following vector auto-regression (VAR) model to assess the mutual information transmissions between the two return time series for each firm:

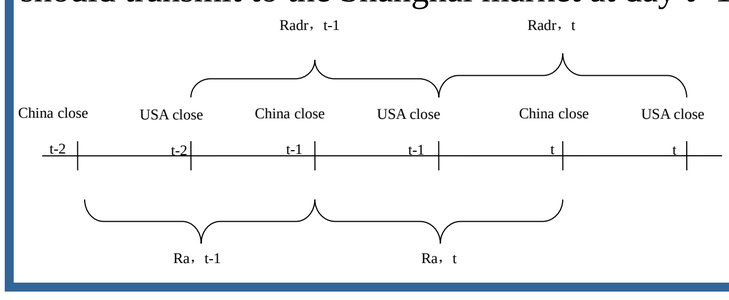
$$R_{adr,\,t} = \alpha_0 + \alpha_1 R_{adr,\,t-1} + \alpha_2 R_{a,\,t} + \varepsilon_{adr,t} \quad (1)$$
$$R_{a,\,t} = \beta_0 + \beta_1 R_{a,\,t-1} + \beta_2 R_{adr,\,t-1} + \varepsilon_{a,t} \quad (2)$$

To account for the influence of the stock market sentiments, we add the market returns to the adjusted VAR model. The proxy for the U.S. market is the S&P 500 index, and that for China is the Shanghai composite index. As a result, we have the following two equations where the market sentiments are introduced as exogenous variables to examine their mutual return effects for each firm:

$$R_{adr,\,t} = \alpha_0 + \alpha_1 R_{adr,\,t-1} + \alpha_2 R_{a,\,t} + \alpha_3 R_{us,\,t} + \varepsilon_{adr,t} \quad (3)$$
$$R_{a,\,t} = \beta_0 + \beta_1 R_{a,\,t-1} + \beta_2 R_{adr,\,t-1} + \beta_2 R_{sh,\,t} + \varepsilon_{a,t} \quad (4)$$

The Relation between the Returns of ADRs and A-shares

The trading hours of ADRs do not overlap with those of the Shanghai A-shares. Trading information at day t in the Shanghai market may transmit to the U.S. market at same calendar day. The information at day t in U.S. market, however, should transmit to the Shanghai market at day t+1.



Regression Results

This table presents the results of Eqs. (3) and (4) using pooled data. Three sample periods, that is, the whole period, before and after the global financial crisis, are estimated separately. Returns on ADRs and A-shares at day t are represented by $R_{adr,t}$ and $R_{a,t}$, respectively. The market return in U.S., $R_{us,t}$, is represented by the S&P 500 index, while the market return in China, $R_{a,\,t}$, is proxied by the Shanghai composite index. t-statistics are in the parentheses. * indicates significance at 10% level, ** indicates significance at 5% level, and *** indicates significance at 1% level.

	Dependent variable: $R_{adr,\,t}$			Dependent variable: $R_{a,\,t}$		
	Whole sample	Before crisis	After crisis	Whole sample	Before crisis	After crisis
Constant	0.0003 (1.23)	-0.0002 (-0.27)	0.0004 (1.63)	-0.0001 (-0.70)	0.0008 (1.17)	-0.0002 (-0.89)
$R_{adr,\,t-1}$	-0.0841 (-11.53)***	-0.0613 (-3.05)***	-0.0885 (-11.40)***	0.0396 (6.91)***	0.0584 (3.33)***	0.0376 (6.39)***
$R_{a,\,t}$	0.3881 (30.71)***	0.3665 (14.99)***	0.4205 (26.50)***			
$R_{a,\,t-1}$				0.0472 (6.64)***	0.073 (4.49)***	0.0349 (4.27)***
$R_{us,\,t}$	1.2863 (86.07)***	1.6605 (29.40)***	1.237 (81.16)***			
$R_{sh,\,t}$				1.0576 (104.71)***	1.1297 (47.91)***	1.0179 (87.76)***
Sample size	10250	1570	8670	10250	1570	8670
Adj. R^2	0.48	0.39	0.5	0.53	0.6	0.48

Conclusion

Many Chinese firms, when going public for the very first time, have chosen the United States as the listing venue to sell shares, in the form of ADRs. This overseas equity offering typically takes place without a prior or simultaneous Chinese domestic listing. Some of the US-listed Chinese firms have subsequently returned to China, with an A-share offering to domestic investors. Though ADRs and their underlying A-shares lack full fungibility due to market segmentation, they nevertheless represent the same claiming rights and are affected by the same fundamentals.

We find out that Chinese ADRs are significantly affected by the U.S. stock market sentiment. This finding in itself is interesting, for it suggests that Chinese ADRs are strongly affected by the U.S. stock market where they are merely listed. This may occur for two reasons:

First, the Chinese ADRs are established long before their corresponding A-shares.

Second, the U.S. media is more widely read and followed by investors, and is not subject to any government restrictions.